

We claim:

- 1    1.    A method, comprising:  
2        receiving a broadcast transaction from a requestor in a computer system;  
3        determining if a command queue is full;  
4        dispatching the broadcast transaction to the command queue if the command  
5                queue is not full; and  
6        issuing a delay transaction response to the requestor if the command queue is  
7                full.
- 1    2.    The method of claim 1, wherein the broadcast transaction is an End-of-Interrupt  
2    transaction.
- 1    3.    The method of claim 1, further comprising:  
2        forcing other transactions to retry if the delay transaction response was issued;  
3        receiving a retry of the broadcast transaction from the requestor if the delay  
4                transaction response was issued; and  
5        dispatching the retried broadcast command to the command queue if the  
6                command queue is not full.
- 1    4.    An apparatus, comprising:  
2        a command queue coupled to a detector to detect if the command queue is full;  
3        a command dispatcher coupled to the command queue and the detector, the  
4                command dispatcher including:

5 logic to dispatch a broadcast command from a requestor to the command  
6 queue if the command queue is not full; and  
7 logic to respond to the requestor with a delay transaction response if the  
8 command queue is full.

1 5. The apparatus of claim 4, wherein the broadcast command is an End-of-  
2 Interrupt transaction.

1 6. The apparatus of claim 4, further including logic to force a retry of subsequent  
2 commands until a retried broadcast command has been dispatched to the command  
3 queue.

1 7. A machine-readable medium having stored thereon instructions, which when  
2 executed by at least one machine cause said at least one machine to perform:  
3 receiving a broadcast transaction from a requestor in a computer system;  
4 determining if a command queue is full;  
5 dispatching the broadcast transaction to the command queue if the command  
6 queue is not full; and  
7 issuing a delay transaction response to the requestor if the command queue is  
8 full.

1 8. The medium of claim 7, wherein the broadcast transaction is an End-of-  
2 Interrupt transaction.

1     9.     The medium of claim 7, further comprising:  
2           forcing other transactions to retry if the delay transaction response was issued;  
3           receiving a retry of the broadcast transaction from the requestor if the delay  
4           transaction response was issued; and  
5           dispatching the retried broadcast command to the command queue if the  
6           command queue is not full.

1     10.    A method, comprising:  
2           dispatching a bus transaction from a requestor to a device;  
3           starting a timer;  
4           determining if the timer expires before the device responds to the dispatched  
5           bus transaction; and  
6           issuing a deferred transaction response to the requestor if the timer expires.

1     11.    The method of claim 10, wherein starting occurs only if an in-order-queue has a  
2     depth of 1.

1     12.    The method of claim 10, wherein issuing includes issuing an unconditionally  
2     deferred transaction.

1     13.    An apparatus, comprising:  
2           a command dispatcher coupled to a command queue;  
3           a detector coupled to the command dispatcher to detect if a command  
4           dispatched to the command queue by the command dispatcher has been  
5           responded to;

6 a timer coupled to the detector; and  
7 logic coupled to the timer to issue a deferred response to the requestor if the  
8 timer expires before the command has been responded to.

1 14. The apparatus of claim 13, wherein the logic includes logic to issue the deferred  
2 response if an in-order-queue has a depth of 1.

1 15. The apparatus of claim 13, wherein the timer is a programmable timer.

1 16. A machine-readable medium having stored thereon instructions, which when  
2 executed by at least one machine cause said at least one machine to perform:

3 receiving a bus transaction from a requestor to a device;  
4 starting a timer;  
5 determining if the timer expires before the device responds to the dispatched  
6 bus transaction; and  
7 issuing a deferred transaction response to the requestor if the timer expires.

1 17. The medium of claim 16, wherein starting occurs only if an in-order-queue has  
2 a depth of 1.

1 18. The medium of claim 16, wherein issuing includes issuing an unconditionally  
2 deferred transaction.

- 1    19.    A method, comprising:  
2            determining if write data buffer space and command buffer space are available  
3                    for an initial locked memory read transaction that is potentially within  
4                    programmable attribute map space;  
5            dispatching the read transaction if the write data buffer space and command  
6                    buffer space are available; and  
7            issuing a delayed transaction response if the write data buffer space and  
8                    command buffer space are not available.
- 1    20.    The method of claim 19, wherein determining includes determining if the write  
2            data buffer space and command buffer space are available in a downstream queue.
- 1    21.    The method of claim 20, wherein dispatching includes dispatching to the  
2            downstream queue.
- 1    22.    An apparatus, comprising:  
2            a command dispatcher coupled to a destination queue;  
3            a detector coupled to the destination queue to detect if the write data buffer  
4                    space and command buffer space are available for use by an initial  
5                    locked memory read transaction that is potentially within programmable  
6                    attribute map space ;  
7            logic coupled to the command dispatcher to dispatch the read transaction if the  
8                    write data buffer space and command buffer space are available; and

9           logic coupled to the command dispatcher to convert the transaction to a delayed  
10           transaction if the write data buffer space and command buffer space are  
11           not available.

1   23.    The apparatus of claim 22, wherein the destination queue is a downstream  
2   queue.

1   24.    The apparatus of claim 22, wherein the command dispatcher includes an in-order  
2   queue.

1   25.    A machine-readable medium having stored thereon instructions, which when  
2   executed by at least one machine cause said at least one machine to perform:  
3           determining if write data buffer space and command buffer space are available  
4           for an initial locked memory read transaction that is potentially within  
5           programmable attribute map space;  
6           dispatching the read transaction if the write data buffer space and command  
7           buffer space are available; and  
8           issuing a delayed transaction response if the write data buffer space and  
9           command buffer space are not available.

1   26.    The medium of claim 25, wherein determining includes determining if the write  
2   data buffer space and command buffer space are available in a downstream queue.

1   27.    The medium of claim 26, wherein dispatching includes dispatching to the  
2   downstream queue.

1    28.    A system, comprising:  
2           a command dispatcher coupled to a command queue;  
3           broadcast command control logic having:  
4               a first detector coupled to the command queue and the command  
5               dispatcher to detect if the command queue is full;  
6               first logic coupled to the first detector to dispatch a broadcast command  
7               from the command dispatcher to the command queue if the  
8               command queue is not full; and  
9               second logic coupled to the first detector to respond to the requestor with  
10              a first delayed transaction response if the command queue is full;  
11           dispatch timer logic having:  
12               a second detector coupled to the command dispatcher to detect if a first  
13               command dispatched to the command queue by the command  
14               dispatcher has been responded to;  
15               a timer coupled to the second detector; and  
16               third logic coupled to the timer to issue a deferred response to the  
17               requestor if the timer expires before the first command has been  
18               responded to; and  
19           lock read control logic having:  
20               a third detector coupled to the command queue to detect if write data  
21               buffer space and command buffer space are available for use by  
22               an initial locked memory read transaction that is potentially  
23               within programmable attribute map space ;

24 fourth logic coupled to the command dispatcher to dispatch the read  
25 transaction if the write data buffer space and command buffer  
26 space are available; and  
27 fifth logic coupled to the command dispatcher to issue a second delayed  
28 transaction response to the requestor if the write data buffer  
29 space and command buffer space are not available.

1 29. The system of claim 28, wherein the broadcast command is an End-of-Interrupt  
2 transaction.

1 30. The system of claim 28, wherein the timer is a programmable timer.